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## America's Priceless Heritage: Cultural and Fossil Resources on Public Lands

Bureau of Land Management



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November 2003





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# America's Priceless Heritage:

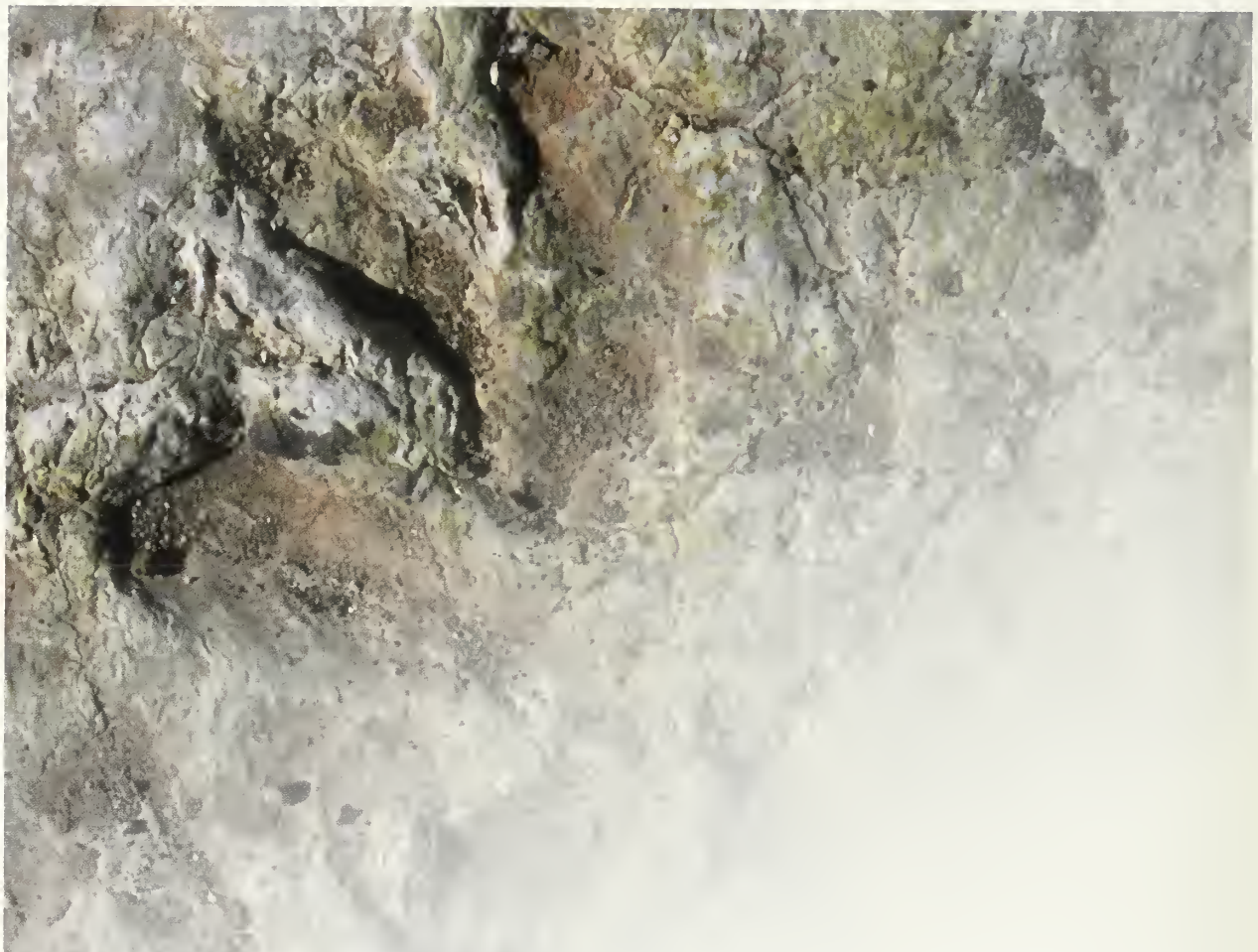
## Cultural and Fossil Resources on Public Lands



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Bureau of Land Management  
November 2003

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**Cover photo:** Canyon View

Ruin is a Navajo refugee site in  
the Dinetah region of northwest  
New Mexico. Built atop a  
boulder with a commanding  
view of Largo Canyon, this  
defensive site offered a safe haven  
for local Navajo farmers and  
herders from attacking Utes and  
Spaniards in the early 1700s.

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# Preface:

## An Invitation to the Reader

The Bureau of Land Management (BLM) is responsible for managing 261 million acres of public land—about one-eighth of the United States. Most of these lands are in the Western United States, including Alaska, and they include extensive grasslands, forests, high mountains, arctic tundra, and deserts. BLM also manages about 700 million acres of subsurface mineral resources, as well as numerous other resources, such as timber, forage, wild horse and burro populations, fish and wildlife habitat, wilderness areas, and archaeological, historical, and paleontological sites.

BLM administers the public lands within the framework of numerous laws, the most comprehensive of which is the Federal Land Policy and Management Act of 1976 (FLPMA). FLPMA directs BLM to follow the principle of “multiple use,” which means managing the public lands and their various resource values “so that they are utilized in the combination that will best meet the present and future needs of the American people.” This multiple use mission requires BLM to address quality of life issues, including providing clean air and water; providing recreational opportunities; protecting wildlife; and safeguarding cultural and fossil resources; as well as providing for a sound economy through the production of energy, food, and fiber and by sustaining local communities and their heritage.

Given the scope of its multiple use mission, BLM affects more Americans on a daily basis than any other land management agency. The Bureau constantly faces the challenge of ensuring a balance of land uses among perspectives that are occasionally, if not often, competing. BLM recognizes that people who live near the public lands have the most direct connection and knowledge of them, as well as a commitment to their stewardship. At the same time, the Bureau maintains a national focus because these lands belong to all Americans, whose appreciation of them continues to increase.

BLM’s central challenge is to *balance the demands of growth and the imperative for conservation*. America is entering into a new era of conservation to achieve a healthier environment and a more secure economy—what Secretary of the Interior Gale Norton







calls the “new environmentalism.” Secretary Norton sums this new environmentalism up in a visionary approach she calls the “four Cs”—using communication, cooperation, and consultation, all in the service of conservation. At the heart of the four Cs is the Secretary’s belief that for conservation to be successful, BLM must involve the people who live on, work on, and love the land.

The Bureau’s ability to partner with public land users; local residents; nonprofit groups; universities; “friends of” organizations; and State, local, and tribal governments fosters a wide and diverse support network. This network is essential not only because the agency has limited staff and budget resources, but because there is a wide variety of stakeholders who are concerned about public land management. The Bureau has been working cooperatively with partners and volunteers for decades and that work has yielded outstanding results towards attaining common goals and values.

Secretary Norton’s approach to conservation is especially relevant to the management of cultural and fossil resources on public lands. These resources are a constant source of fascination for visitors. People look to these resources for recreational opportunities...for fulfilling their curiosity about the recent and remote past...for contemplating their origins...for preserving and continuing their cultures...for finding peace and quiet. The Secretary’s approach to managing these resources was furthered on March 3, 2003, when President Bush signed a new Executive Order, which directs Federal agencies to advance the protection, enhancement, and contemporary use of historic properties, particularly by seeking public-private partnerships to promote the use of such properties as a stimulus to local economic development. The Executive Order is an important component in a new White House initiative called *Preserve America*, which was announced on March 3, 2003 by First Lady Laura Bush. The *Preserve America* program will serve as a focal point for the support of the preservation, use, and enjoyment of America’s historic places.

The Bureau is proud of its mission and understands why it is crucial to the Nation’s future. The Bureau’s vision is to live up to this ambitious mission and thereby meet the needs of the lands and our people. In order to achieve this goal, the Bureau must seek new ways of managing that include innovative partnerships and, especially, a community-based focus that

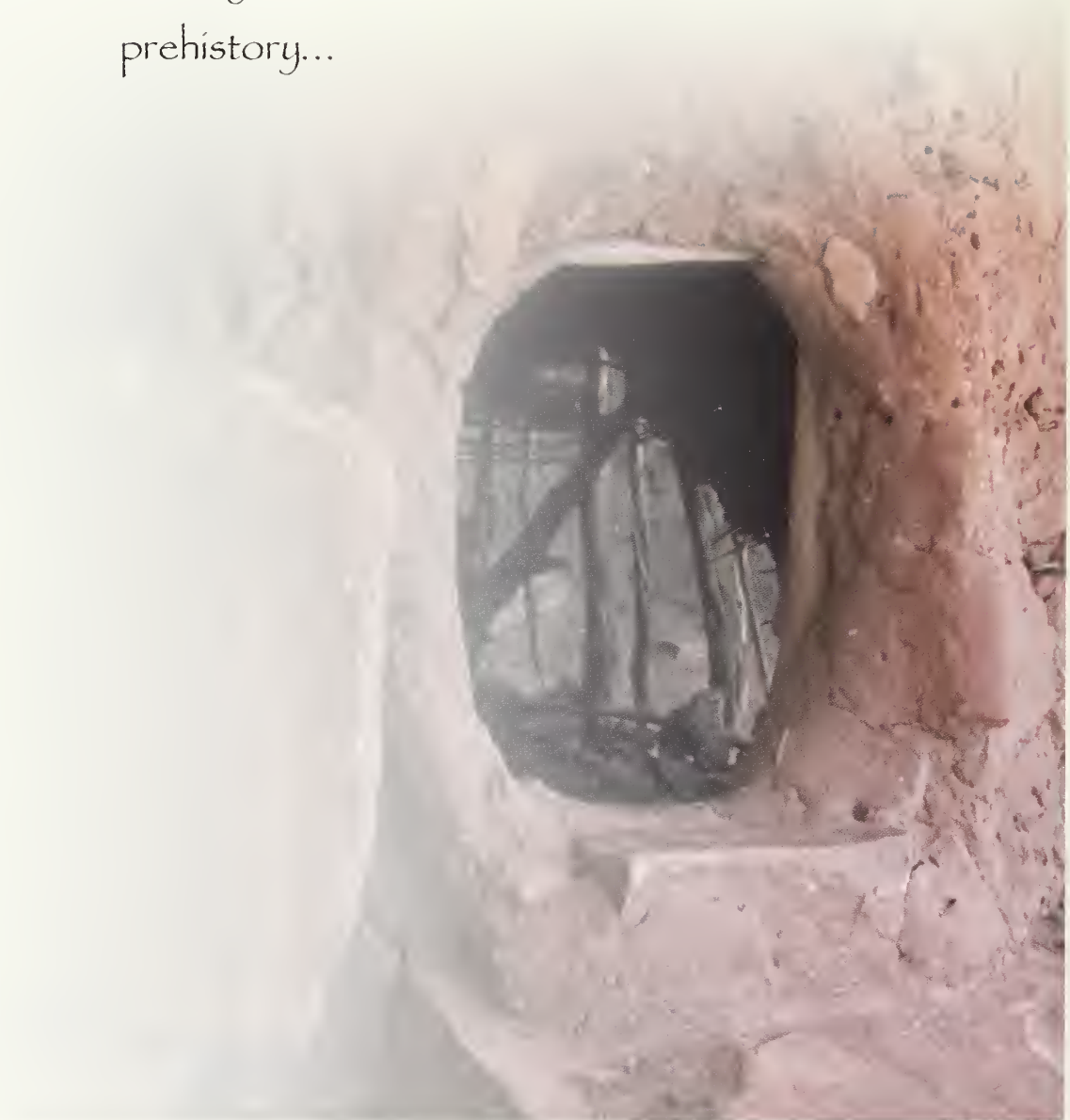
involves citizen stakeholders and governmental partners who care about the public lands and the cultural and fossil resources found on them. This document is an invitation to you—the public BLM serves—to continue your ongoing dialogue with us about the health and future of the Nation's cultural and natural legacy. Tell us what is important to you, what you care most about, what you want saved, and how BLM can work collaboratively to preserve our priceless legacy.

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# Introduction

The public lands administered by the Bureau of Land Management (BLM) contain a wealth of cultural and paleontological resources. These resources are important to our understanding of both recorded history and prehistory—the period of time before written history. They represent a priceless heritage, which must be protected for the next generation. The purpose of this report is to highlight the wealth of these cultural and paleontological resources, focus attention on the increasing challenge with regard to their preservation, present what BLM has done in the past, and ask for the public's help in defining what yet needs to be done if we are to preserve these resources and save our vanishing past.

## Our Nation's Cultural and Paleontological Resources

The public lands are dotted with literally hundreds of thousands of archaeological and historic sites that document at least 13,000 years of human history. These sites include everything from ancient Paleo-Indian mammoth kills to tantalizing oversized ground figures etched in desert pavements (intaglios), from awe-inspiring prehistoric complexes of Anasazi pueblos and cliff dwellings to evocative and mysterious rock art, from intriguing Spanish and Russian period exploration to lonely outposts of historic era exploration and settlement, from more recent historic sites documenting trails that immigrants followed westward and lighthouses that guided ships at sea to evidence of mining, ranching, railroading, and even 20th century military activities. The physical manifestations of these and other time periods and cultures are collectively referred to as “cultural resources,” and they represent a significant part of our Nation's cultural heritage.

The cultural resources on western public lands represent all major periods and events in the broad sweep of human occupation in the West, from prehistoric times up through the present era. These resources are studied by archaeologists with great interest because they tell the story of all kinds of people, representing nearly every cultural tradition and ethnicity present in American society. In general, these people include first Americans (ancient cultures and contemporary Indian tribes)





and immigrant Americans (explorers, miners, ranchers, homesteaders, soldiers, and others). Undamaged, BLM's cultural resources have the capability to tell us when people first arrived on the continent, how they dispersed, how cultures flourished, what led to their demise, how they perceived the spiritual world, how they interacted with other cultural groups, how they exploited and perhaps overexploited their environment, how they treated the dead, how and why they came into conflict, and much more.

While archaeologists are interested in cultural resources, paleontologists are interested in fossil resources found on public lands. Fossils are the remains, imprints, and traces of once-living organisms preserved in the Earth's crust that can relate the story of origins and endings played out over nearly 4 billion years of the Earth's 4.5-billion-year history. Fossils of thousands of kinds of plants, animals, and other organisms, including tiny trilobites more than 600 million years old, dinosaurs with razor-sharp teeth and claws from between 210 and 65 million years ago, and Ice Age lions and cheetahs, can be found on the public lands.

Fossils found on public lands are important for the story they can tell us about the development of life on Earth and about the physical changes in the Earth itself. They provide clues to a myriad of important and intriguing questions, from the "hot" topic of dinosaur extinctions to studies of plate tectonics (the geology of the Earth's structural deformation). Consequently, the public lands provide great outdoor laboratories and classrooms for the study of paleontology and also contribute significantly to public exhibits found in museums. For example, BLM's Cleveland-Lloyd Dinosaur Quarry in Utah has produced fossils that are exhibited in over 40 museums worldwide. Undamaged, BLM's fossil resources can reveal not only how the plant and animal communities have changed, but how the face of the Earth has been altered by the movement of continents, the uplift of mountain ranges, the appearance and disappearance of ice caps, and the flooding and drying of huge areas of land.

## Why These Resources Are At Risk

While these resources contribute to our understanding of the origins of life and of civilization in North America, they also



dazzle, delight, thrill, bewilder, and fascinate any person who comes upon them, whether that person is a curious tourist, an intrepid backcountry adventurer, an accidental visitor, an artist in search of inspiration, or an inquisitive scientist. The fact is—these resources belong to all people for all time. However, the cultural and paleontological resources on BLM public lands, both those that are visible and those that are still unexposed, are seriously at risk. They are threatened by individuals who appropriate them for their personal enjoyment or profit, the unanticipated effects of legitimate recreational activities, and unauthorized land uses that diminish the resource base. Additionally, natural processes are forever reshaping the landscape and eroding what, even to begin with, may never have been more than a one-in-a-million preservation occurrence.

Cultural and paleontological resources are affected by:

- **Theft and Looting:** Throughout the decades, the BLM public lands have been an easy target for thieves and looters. Today, the plundering and destruction of cultural and paleontological treasures has become a highly lucrative business involving a network of looters, expert fences, and knowing buyers in the United States, Japan, Switzerland, Germany, and elsewhere. We know that some individuals involved in the looting of cultural remains are also involved in the theft of fossil resources. We know that some of these individuals are engaged in other illegal activities, such as dealing drugs. We know, too, that most artifacts and fossils taken from the public lands are very difficult to track to their place of origin. And we know that as looted objects move further up the trafficking chain and wind up at such places as art galleries, auction houses, Internet sites, and even museums, their ownership and sale is lent a veneer of legitimacy. Unlike in many other countries of the world, where cultural artifacts that lie below the ground belong to the State and individuals purchasing an “antique” must receive and produce a certificate of authority to prove their right of ownership, in this country, illegal possession must be proven by law enforcement authorities. And this is often difficult, if not impossible.

Clearly, sites and localities concealing commercially valuable artifacts and fossils are the primary targets of looters,





although objective estimates of the extent of damage and destruction to such places are essentially nonexistent. The theft of hundreds of fossils from the public lands every year is destroying the contextual information critical for interpreting fossils and reducing areas available for scientific study and public enjoyment.

- **Population Growth in the West:** Destruction and degradation of cultural and paleontological resources is not solely the result of theft and looting, however. Increasing visitation to the public lands is resulting in both intentional and inadvertent damage to these resources from collection, vandalism, surface disturbance, and other depreciative behavior. Remote areas, once protected by their distance from populated areas, are now within easy reach of the hardy and well-equipped hiker, off-highway vehicle user, and urban and suburban resident. Additionally, the cultural resources of the West and sites where dinosaur bones have been found are attracting visitors from all over the world to areas where they may negatively affect fragile resources if they are not better informed.

Unfortunately, individuals who visit the public lands will sometimes appropriate cultural and paleontological resources for personal enjoyment. Even seemingly mundane artifacts have been used in the decor of modern homes. One BLM archaeologist witnessed bathroom sinks formed from hundreds of prehistoric potsherds pieced together, metates used for splash blocks below drain spouts, and glass containers of potsherds and arrowheads displayed on coffee tables. There are documented cases of prehistoric petroglyphs being sawed from panels on the public lands and incorporated into fireplaces or used to decorate the outsides of homes. This practice of using ancient artifacts in the decoration of private homes contributes to the loss of our common legacy from the past and must change if we are to keep the past from becoming relegated to the mantelpiece of posterity.

- **Forces of Nature:** Natural deterioration also plays a role in reducing resource diversity. Erosion, weathering, and arroyo cutting can all impact cultural and paleontological resources.



Regardless of the cause of damage to these resources, the result is the same—they are being lost in no less of a dramatic fashion than a rare illustrated manuscript having its pages torn apart and tossed into a fire, extinguishing the compelling story it can tell us for all time.

## How BLM is Addressing the Challenge

The management of cultural and paleontological resources on the public lands is overseen by the BLM Washington Office's Cultural and Fossil Resources and Tribal Consultation Group, which reports to the Assistant Director for Renewable Resources and Planning. The BLM earmarks funds for cultural resource management and other programs from the funding it receives through the Appropriations Act for the Department of the Interior and Related Agencies, under the title of Management of Lands and Resources. In fiscal year 2002, BLM's cultural resource management appropriation was \$14.2 million. This appropriation was expected to fund numerous tasks, including:

- protection, study, management, and stabilization of BLM's cultural and paleontological resources
- interpretation of these resources
- educational initiatives promoting the teaching of higher order thinking skills, science, math, and other required school subjects using cultural and paleontological resources
- protection and curation of museum collections recovered from on-the-ground investigations
- consultations with Indian tribes and Alaska Native corporations
- development of partnerships with non-Federal entities
- repatriation of museum collections subject to the provisions of the Native American Graves Protection and Repatriation Act

There are approximately 150 cultural and fossil resource specialists in BLM who are responsible for an overwhelming number of





resources, including a projected 4 to 4.5 million archaeological and historical properties, thousands of paleontological localities, and millions of museum objects housed in 3 Federal and at least 160 non-Federal museums. These specialists conduct numerous tribal consultations that result in hundreds, if not thousands, of contacts annually. In addition, BLM's cultural resource specialists fulfill National Historic Preservation Act responsibilities for approximately 8,000 land use actions, even though the appurtenant compliance costs are borne by applicants and not by BLM's cultural resource management appropriation. They are also involved in permitting scientific research and coordinating with law enforcement authorities to protect threatened sites.

BLM is addressing the urgent need to preserve cultural and paleontological resources on public lands in various ways. The long-term protection of these resources has been established as one of the Department of the Interior's strategic goals. This goal is intended to highlight and address threats to these resources effectively. Each of the BLM States has identified the cultural and paleontological resources in their areas of jurisdiction, as well as some specific challenges in managing these resources. The States have also explored low- and moderate-cost solutions to address these needs. They have entered into partnerships to help alleviate the workload and the financial burden associated with caring for these resources. In addition, BLM is trying to educate the public about the importance of preserving these precious resources by interpreting many cultural and paleontological sites and supporting existing school curriculums through the Heritage Education Program and Project Archaeology.

## What More Needs to Be Done

Though BLM is doing what it can to preserve cultural and paleontological resources, additional action must be taken. In 1999, Congress asked the Secretary of the Interior to review Federal policy concerning fossils, a task that involved the Bureau of Land Management, Bureau of Reclamation, Bureau of Indian Affairs, Fish and Wildlife Service, National Park Service, U.S. Geological Survey, U.S. Forest Service, and Smithsonian Institution. The agencies concluded that fossils on Federal lands often needlessly deteriorate or disappear through theft, vandalism, and other causes, and that the problem is exacerbated by lack of personnel and resources for assessment, management,



and protection. The Secretary's report, "Fossils on Federal and Indian Lands" (May 2000), recommended that renewed Congressional attention could significantly advance Federal policy on fossils, and that Congress should consider the merits of a framework for fossils analogous to the Archaeological Resources Protection Act, including the need for stiffer penalties for those who damage and steal certain fossils.

In March 2001, the Advisory Council on Historic Preservation issued the report, "Caring for the Past, Managing for the Future: Federal Stewardship and America's Historic Legacy," which points to the wealth of historic resources managed by the Federal Government, describes both the successes and failures in their preservation, and recommends specific measures to correct many of the problems. Among other things, the report recommends establishing legislation to encourage, rather than impede, public-private partnerships through more widespread creation and use of "friends of" organizations, which work with Federal managers in support of private fundraising and other activities, and providing better funding and staff support for Federal historic preservation activities.

Americans share in this unique cultural legacy preserved on our public land. We are enriched by its collective ownership and impoverished in many ways by its loss. The recommendations in the reports mentioned above, as well as the recommendations that emanate from public discussion, are important to the preservation of the cultural and paleontological resources on BLM public lands, and it is critical that we take action now. To the extent that our cultural and natural heritage is an expression of our identity as a Nation and as a people, the loss of these resources is something that affects us all.

The need to protect these precious resources is urgent—BLM does not have the luxury of leaving the preservation or restoration of a unique cultural or paleontological resource for another day. As the agency pursues its multiple use mission, we need the help of the public to do so in a manner that meets contemporary economic and community goals, while conserving our priceless heritage for the next generation.



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# General Cultural Timeline for the Western U.S.

BLM's cultural resources represent all major periods and events in the broad sweep of human history in the West. From the expansion of people across the continent around 13,000 years ago to the Cold War just ended, BLM sites tell the stories of people who have lived on this land.

The archaeological record holds precious information about the Paleo-Indians who populated North America at the end of the Ice Ages. These people hunted throughout the continent, leaving occasional traces of their passing at sites such as the Mill Iron site in Montana, the Dietz site in Oregon, and the Mesa site in Alaska.

The Paleo-Indian way of life gave way to the Archaic tradition by about 7,500 years ago. Hunters and gatherers adapted to changing environments, giving rise to many distinctive cultural patterns throughout the West and through time. In the Far West, Northwest, and Great Basin, different variations of the Archaic tradition continued until Europeans were encountered. Thousands of BLM archaeological sites tell the story of this long period of human history.

In other parts of the West, including portions of the Southwest and Great Plains, people adopted agriculture to supplement hunting and gathering. By about 2,000 years ago, the Anasazi and Mogollon in Arizona and New Mexico, for example, lived in villages, grew corn and other crops, and engaged in long-distance trade. The Pueblo peoples of the area are descended from these early farmers, and the areas where they settled are some of the most remarkable archaeological sites in the country.

Contact with Europeans during and after the 16th century A.D. brought disease, warfare, and significant cultural change. The adoption of the horse by Plains people, for example, led to the development of a highly mobile hunting and raiding way of life, very different from what came before. Disease ravaged native populations, weakening their resistance to the great tide of change coming across the continent.

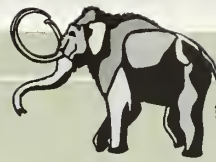


# Cultural Timeline—Before European Contact

## Event

## Time

Earliest settlers enter North America



11000+ B.C.

Paleo-Indian hunters populate the continent



9500 B.C.

Archaic way of life begins; diverse hunting-gathering cultures develop, lasting until contact with Europeans in parts of the West



6000 B. C.

Bow and arrow come into use



0 B.C.

Farming appears among the people of the Southwest



100 B.C.

Anasazi construct cliff-house communities and apartmentlike complexes of 1,000 rooms or more, which are abandoned by A.D. 1300



A.D. 1000

Expansion of Numic-speaking peoples in the Great Basin



A.D. 1100

Migration of Athabascan-speaking peoples from the north into the Pacific Northwest and Southwest



A.D. 1100-1400

Contact with Europe; Columbus arrives in the Western Hemisphere



A.D. 1492



# Cultural Timeline—After European Contact

Event		Time
Francisco Vasquez de Coronado leads Spain's invasion of the Southwest		A.D. 1540-42
European diseases periodically ravage native peoples' communities		A.D. 1600-1900
Horses transform Plains Indian culture, enabling tribes to hunt buffalo more efficiently and to range farther		A.D. 1650
Russia "discovers" Alaska		A.D. 1741
United States declares independence		A.D. 1776
Companies vie for fur trade in the West		late 18th century
Lewis and Clark Expedition		A.D. 1803-06
General Land Office established		A.D. 1812
Indian Removal Act passed; Eastern tribes removed to the West		A.D. 1830
Joseph Smith publishes Book of Mormon, leading to eventual Mormon settlement in Utah		A.D. 1830
Westward expansion along Oregon Trail begins		A.D. 1843
California gold rush begins after discovery of gold at Sutter's Mill		A.D. 1848
20,000 Chinese arrive in California in search of gold		A.D. 1852
Coast-to-coast telegraph completed		A.D. 1861
Civil War begins		A.D. 1861
Homestead Act passed allowing claims of up to 160 acres of public lands		A.D. 1862
Indian wars		mid to late 19th century
First cattle trail blazed from Texas to New Mexico		A.D. 1866
Transcontinental railroad completed		A.D. 1869
General Mining Law enacted		A.D. 1872
Custer's last stand at the Battle of the Little Bighorn		A.D. 1876
Geronimo surrenders after more than a decade of guerrilla warfare		A.D. 1886
Forest Service established		A.D. 1905
National Park Service established		A.D. 1916
Bureau of Land Management established		A.D. 1946
Urban expansion, increased recreational use of western lands		A.D. 2000



Exploration and trade drove the initial European forays into the West as early as the Spanish incursion into the Southwest in the 1540s and the Russian claim to parts of Alaska after 1741. By the end of the 1700s and early 1800s, various nations—Spanish, French, English, Russian, and American—competed to have and to hold the vast lands and resources of the West. The Lewis and Clark Expedition in the early 19th century marked the beginning of America's relentless overland push westward and the claiming of lands through purchase, negotiation, and conquest.

As the Indian wars of the late 19th century forced many native peoples onto reservations, new immigrants came to settle the land. The lure of gold and free land drew many to the West, where Americans mingled with others to form new rural communities. Farming, ranching, logging, and mining supported local peoples, with communities linked to distant urban and industrial centers through such trails as the Camino Real de Tierra Adentro, the Oregon Trail, the Pony Express, and Butterfield Stage route. BLM's many archaeological sites tell the stories of these early western communities.

The 20th century brought further changes to the West. The Federal Government left its own legacy upon the land with the establishment of the National Forests, National Parks, and in 1946, the Bureau of Land Management. Native peoples, many from reservations, have continued to use Federal lands for both sacred and secular purposes. The American military trained for the two World Wars and the Cold War on vast stretches of the public lands. Today, increasing populations and urbanization are driving higher demand for recreational uses of these western lands.

Indian groups today remain vitally concerned with their history and culture, as do many descendants of the early historic communities in the West. The traditional cultural knowledge of these living groups provides valuable insights into past ways of life. Yet the history of the American West is still only partly told. Large questions remain: What was life like for the earliest people on this continent? What effect did major technological innovations—such as the bow and arrow, irrigation, and agriculture—have on the Indian history of this continent? How did the many different native peoples relate to one another and the land on which they lived? What effect did European epidemic diseases have on American Indian societies? What was life like in the West for those—mainly minorities and women—whose voices



are rarely heard in traditional American histories? How did historic Euro-American land use patterns affect the ecology of the region today?

The thousands of archaeological sites on BLM lands, as well as the elders in traditional communities, can provide answers to these and other important questions. BLM has a strong obligation to manage and protect those places on the lands that contain a significant part of this Nation's cultural heritage for current and future generations of Americans.

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BLM issues Paleontological Resource Use Permits to qualified scientists who want to conduct scientific investigations. Permits are required for virtually any activity involving fossil vertebrates, as well as for work that focuses on scientifically significant invertebrates or plants.

Not all fossil collecting requires a permit. Anyone may collect reasonable amounts of common invertebrates and plants for noncommercial use, such as for a personal collection. Petrified wood, which is treated as a mineral material in the regulations, may also be collected in limited quantities.

A permit serves primarily as a communication tool between researchers and BLM, increasing BLM's understanding of the important fossils on lands it administers and its ability to care for them. This information is also used in creating interpretive materials for the public, such as signs, brochures, and museum displays. Specimens collected through the permit process must be kept in reputable museums and universities, where they remain the property of the Federal Government, held in trust for the American people. Museums act as stewards for these resources, making them available in perpetuity for ongoing study, education, and enjoyment.

Commercial use of fossils from public lands is not allowed. The sale or barter of fossils removes them from the public trust. If specimens are stolen from public lands and sold for profit, they are available to only a few individuals rather than to the public as a whole. Theft of fossils is a problem of unknown scale, but documented cases show that commercial dealers, as well as unscrupulous private collectors, are involved.



# Geologic Time Scale

The geologic time scale is a method of dividing Earth's history. Initially, it was used to mark differences between fossils to divide thick sequences of strata into related groups, formations, and beds. Later, a classification of these formations of strata and larger units was produced. At the time, the sequence included only deposits from the last three eras of Earth's history.

This organization of rocks resulted in the development of the geologic time scale. The time scale is made up of three kinds of geological units:

- Rock units describe the physical characteristics of the rocks themselves.
- Time units refer only to the passage of time. For example, the Cenozoic era is all of the time between 65 million years ago and today. Eras are divided into periods or systems, and further into epochs and ages. The Cretaceous period, for example, is a division of the Mesozoic era preceding the Cenozoic, and is the time between 144 and 65 million years ago.
- Time-rock units involve both time and rocks or fossil sequences in rocks. Thus, the Cenozoic consists of the rocks that were deposited during the Cenozoic era and the fossils that define its boundaries. Although fossils themselves cannot give an age in years, the order of the appearance or disappearance of various fossils in layers of rock provides the basis for the geologic time scale we use today.

Generally speaking, fossils from all fossil-bearing geologic time periods in this country are represented on public lands managed by BLM.



# Geologic Time Scale

Era/Period/Epoch	Time (million years ago)
<b>CENOZOIC ERA</b>	
Quaternary period	1.8-0
Holocene epoch	0.01-0
Pleistocene epoch	1.8 -0.01
Tertiary period	65-1.8
Pliocene epoch	5-1.8
Miocene epoch	24-5
Oligocene epoch	34-24
Eocene epoch	55-34
Paleocene epoch	65-55
<b>MESOZOIC ERA</b>	
Cretaceous period	144-65
Jurassic period	205-144
Triassic period	250-205
<b>PALEOZOIC ERA</b>	
Permian period	290-250
Pennsylvanian (Carboniferous period)	330-290
Mississippian	354-330
Devonian period	417-354
Silurian period	443-417
Ordovician period	490-443
Cambrian period	545-490
<b>PRECAMBRIAN TIME</b>	545 and older

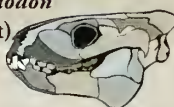
*Smilodon*



*Procamelus*



*Merycoidodon*  
(Oreodont)



*Sauropod* -  
Early Jurassic to  
Cretaceous periods

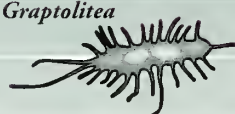


*Theropods* -  
Triassic to  
Cretaceous periods



*Ammonites* -  
Occurred from  
the Paleozoic  
era to the  
end of the  
Mesozoic era

*Graptolitea*



*Trilobites* -  
Lived throughout the  
Paleozoic era



# Conclusions

BLM's Cultural Heritage Program is confronted with a staggering array of responsibilities, which encompass much more than just on-the-ground management of archaeological, historical, and paleontological resources. Meeting these responsibilities with a limited number of professionals and a tight budget continues to be a challenge. Clearly, BLM field offices have had to look for creative solutions to address the massive protection, stabilization, and management issues with which they are confronted. Bureauwide, volunteers and cost-share arrangements have augmented BLM's capability by at least one-fourth, annually leveraging the cash equivalent of more than \$3 million in work for the benefit of the Cultural Heritage Program. Some BLM States, notably Colorado and Arizona, have made tremendous use of outside funds, tapping into their States' lottery and gambling profits to obtain more than \$2 million in grants in recent years to accomplish critical work. Outside funds have also been obtained through these and other such sources:

- Save America's Treasures program, which is a national effort to protect America's threatened cultural resources
- Grants under the Intermodal Surface Transportation Efficiency Act and its successor, the Transportation Equity Act for the 21st Century (TEA-21), which provide transit enhancement funds to carry out historic preservation work at sites along transportation routes
- "Green sticker" funds, which are from fees paid by off-highway vehicle users for adequate and managed facilities and safeguards to protect natural, cultural, and historic resources on public lands

The Cultural Heritage Program has also made strides in obtaining a share of BLM's "deferred maintenance" money to address the stabilization needs at some of our standing historic structures. Some States have established Site Steward Programs, in cooperation with State and other Federal entities, to patrol and monitor threatened sites. Additionally, BLM continues to encourage universities to operate field schools and conduct research on public lands to enhance our understanding of the vast resource base.





Still, in the years ahead, BLM's responsibility to protect and preserve the Nation's cultural and paleontological resources will require yet more creative solutions. The Cultural Heritage Program staff intends to pursue a dialogue with the general public, Congressional oversight committees, and our partners and interest groups to identify other low- and moderate-cost measures that can be implemented in the coming months and years to focus increased attention on the threatened cultural and paleontological resources over which we have stewardship responsibilities. Among the options we hope to explore with the public and our partners are to:

- Strive to make the public a full partner in the management and protection of the threatened cultural and paleontological resources using existing tools such as BLM's cultural heritage Web site ([www.blm.gov/heritage](http://www.blm.gov/heritage)) and "friends of" organizations, as Congress envisioned when it amended the Archaeological Resources Protection Act in 1988

- Continue to expand the use of nontraditional sources of funding, including Federal and private sources, to account for the increased costs of the program.

Through the cultural and America's pr

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*The*  
**Bureau**  
*of* **Land Management**

## Our Vision

To enhance the quality of life for all citizens through the balanced stewardship of America's public lands and resources.

## Our Mission

To sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

## Our Values

To serve with honesty, integrity, accountability,  
respect, courage, and commitment to make  
a difference.

## Our Priorities

To improve the health and productivity of the land to support the BLM multiple-use mission.

To cultivate community-based conservation, citizen-centered stewardship, and partnership through consultation, cooperation, and communication.

To respect, value, and support our employees,  
giving them resources and opportunities to succeed.

To pursue excellence in business practices,  
improve accountability to our stakeholders,  
and deliver better service to our customers.

